

**POWDER METALLURGY CRUCIBLE
FOR ALUMINUM NITRIDE CRYSTAL GROWTH**

ABSTRACT

A crucible for growing III-nitride (e.g., aluminum nitride) single crystals is provided. The crucible includes an elongated wall structure defining an interior crystal growth cavity. Embodiments include a plurality of grains and a wall thickness of at least about 1.5 times the average grain size. In particular embodiments, the crucible includes first and second layers of grains the first layer including grains forming an inside surface thereof and the second layer being superposed with the first layer. The crucible may be fabricated from tungsten-rhenium (W-Re) alloys; rhenium (Re); tantalum monocarbide (TaC); tantalum nitride (Ta₂N); hafnium nitride (HfN); a mixture of tungsten and tantalum (W-Ta); tungsten (W); and combinations thereof.